

Title (en)
METHOD FOR CHEMICAL IMAGING ATOMIC FORCE MICROSCOPE INFRARED SPECTROSCOPY

Title (de)
VERFAHREN FÜR RASTERKRAFTMIKROSKOPIE BASIERTE INFRAROT SPEKTROSKOPIE MIT ERHÖHTEN AUFLÖSUNG UND EMPFINDLICHKEIT

Title (fr)
MÉTHODE POUR SPECTROSCOPIE À L'INFRAROUGE BASÉE EN LA MICROSCOPIE À FORCE ATOMIQUE AVEC UNE RÉOLUTION ET UNE SENSIBILITÉ AUGMENTÉES

Publication
EP 3532853 B1 20240522 (EN)

Application
EP 17800648 A 20171018

Priority

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- US 2017057171 W 20171018

Abstract (en)
[origin: US2018120344A1] Methods and apparatus for obtaining extremely high sensitivity chemical composition maps with spatial resolution down to a few nanometers. In some embodiments these chemical composition maps are created using a combination of three techniques: (1) Illuminating the sample with IR radiation than is tuned to an absorption band in the sample; and (2) Optimizing a mechanical coupling efficiency that is tuned to a specific target material; (3) Optimizing a resonant detection that is tuned to a specific target material. With the combination of these steps it is possible to obtain (1) Chemical composition maps based on unique IR absorption; (2) spatial resolution that is enhanced by extremely short-range tip-sample interactions; and (3) resonant amplification tuned to a specific target material. In other embodiments it is possible to take advantage of any two of these steps and still achieve a substantial improvement in spatial resolution and/or sensitivity.

IPC 8 full level
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